Make It Work Like This One

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Rockwell Collins Decorah

Rockwell Collins

Since its founding as Collins Radio in 1933, Rockwell Collins has been recognized for top quality and advanced technology in its avionics, electronic communications and in-flight entertainment systems for commercial, military and government customers worldwide. Rockwell Collins produces flight control instruments, radio communication devices and satellite voice transmissions.

Highlights: supplied radios to the South Pole expedition of Rear Admiral Byrd in 1933.

:used for Apollo, Gemini and Mercury, providing voice communication for every American astronaut traveling through space.

:in the cockpits of nearly every airline in the world

:transmit nearly 70% of U.S. and allied military airborne communications.

Taken from https://www.rockwellcollins.com/Our-Company/History.aspx

Rockwell Collins Decorah

The work performed by Rockwell Collins Decorah Operations is difficult to automate or involves small numbers of units. Rockwell Collins is focused on improving up-time with test equipment, creating increased reliability for their customers. A part of this effort is preventative maintenance, in which equipment used to test the quality of the avionics electronics is inspected regularly so it may be replaced or repaired before failing.

Assigned Problem to Solve

Engineers spend much of their day breaking problems down into manageable pieces that can be isolated and tested. Students will be presented with a sewn circuit of LED lights that flash, fade, beat or randomly twinkle, and will be told to recreate the circuit. Students will be presented with a integrated circuit on a disk with 6 attachment points (1, 2, 3, 4, + and -), a battery pack and 4 LED lights. They will have to figure out how to attach the lights in the correct positions on the disk to match the model given.

Background for Students

Electricity must travel in a closed circuit. Conductive thread can't cross over itself or it will short. Students can test their designs with aligator clips or tie the components together with the conductive thread before sewing them on the fabric.

Engineer's Approach

Hook battery pack to the IC disk. Figure out how to get one LED to glow. Observe the flashing pattern. Move the LED to other attachment points until all patterns are noted. Match the LED color to the flashing pattern. Sew on to fabric.

Student Solutions

Try to connect all the lights at once. Sew the lights and IC disk on first and then add connections last. Don't understand the problem before trying to solve it.